

**IN THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK**

CENTER FOR BIOLOGICAL DIVERSITY, *et al.*,

Plaintiffs,

v.

U.S. FISH AND WILDLIFE SERVICE, *et al.*,

Defendants.

21 Civ. 5706 (LJL)

**PLAINTIFFS' MEMORANDUM IN SUPPORT OF MOTION
FOR SUMMARY JUDGMENT**

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INTRODUCTION

Until recent years, the eastern hellbender (*Cryptobranchus alleganiensis alleganiensis*) ranged widely across 15 states in the Nation’s Northeast, Midwest, and Southeast. The largest of North American salamanders, the hellbender is a secretive sentinel of cool, clean, free-flowing waters. As the health of these waters go, so goes the health of the hellbender, and in the 1990s, researchers began noticing pronounced declines in many previously robust hellbender populations, caused by a lengthy list of pressures including dam construction, illegal collection and persecution, habitat destruction, and increased sedimentation from a wide variety of sources, including logging, development, livestock grazing, and off-road vehicles.

More than a decade ago, Plaintiff Center for Biological Diversity (“the Center”) petitioned the U.S. Fish and Wildlife Service (“FWS”) to protect the eastern hellbender as an endangered or threatened species under the Endangered Species Act (“ESA”). After litigation to force action, the FWS finally issued its required “12-month” finding in April 2019, but contrary to all available scientific information and data, concluded that protecting the drastically declining eastern hellbender species was “not-warranted.” As detailed in this brief, this determination failed to articulate a rational, legal basis for the listing denial, ignored or mischaracterized the agency’s own conclusions, and made assumptions counter to the best available science. FWS’s decision also violated the ESA by relying on unproven or uncertain conservation measures, failing to consider the adequacy of existing regulatory mechanisms, conducting an arbitrary “significant portion of range” analysis, and arbitrarily truncating the “foreseeable future” to 25 years.

In order for the eastern hellbender to have a chance to pull itself back from its drastic downward population trajectory, FWS must provide the species with its needed protections

under the ESA. Plaintiffs thus ask the Court to declare the FWS's not-warranted determination unlawful, vacate the determination, and remand to the agency with orders to make a lawful determination within one year's time.

LEGAL BACKGROUND

Congress enacted the Endangered Species Act in 1973 to provide “a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved” and “a program for the conservation of such endangered species and threatened species.” 16 U.S.C. § 1531(b). The statute contains an array of procedural and substantive provisions designed to afford imperiled species “the highest of priorities,” so that they can recover to the point where federal protection is no longer needed. *Tenn. Valley Auth. v. Hill*, 437 U.S. 153, 174 (1978). To benefit from the ESA’s provisions, however, a species must first be “listed” by the Secretary of the Interior, acting through FWS, as “threatened” or “endangered” under Section 4 of the Act. 16 U.S.C. § 1533. Congress therefore described Section 4 as “[t]he cornerstone of effective implementation of the Endangered Species Act.” S. Rep. No. 97-418, at 10 (1982).

Section 4 provides that any person may petition the Secretary to list a terrestrial species as threatened or endangered. 16 U.S.C. § 1533(b). A species is considered “endangered” if it “is in danger of extinction throughout all or a significant portion of its range” and “threatened” if it “is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.” *Id.* § 1532(6), (20). The term “species” is defined broadly to include “any subspecies of fish or wildlife or plants, and any distinct population segment of any species of vertebrate fish or wildlife which interbreeds when mature.” *Id.* § 1532(16).

FWS must list a species if it is “endangered” or “threatened” because of “any one or a combination of” the five statutory listing factors: “(A) the present or threatened destruction,

modification, or curtailment of [the species’] habitat or range; (B) overutilization for commercial, recreational, scientific, or educational purposes; (C) disease or predation; (D) the inadequacy of existing regulatory mechanisms; or (E) other natural or manmade factors affecting its continued existence.” *Id.* § 1533(a)(1); 50 C.F.R. § 424.11(c).

The Service’s determination as to the fourth factor, whether existing regulatory mechanisms are inadequate to protect the species, is guided in part by its Policy on Evaluation of Conservation Efforts When Making Listing Determinations (“PECE”). 68 Fed. Reg. 15,100 (Mar. 28, 2003). FWS uses the PECE to determine whether “formalized conservation efforts that have yet to be implemented or to show effectiveness contribute to making listing a species as threatened or endangered unnecessary.” *Id.*

Upon receiving a listing petition, FWS must issue an initial finding within 90 days determining whether the petition “presents substantial scientific or commercial information indicating that the petitioned action may be warranted.” 16 U.S.C. § 1533(b)(3)(A). If it does, FWS must “promptly commence a review of the status of the species” to determine whether listing is warranted. *Id.*

At the conclusion of the status review, and within 12 months of receiving the petition, FWS must make a finding that either (1) listing is warranted; (2) listing is not warranted; or (3) listing is warranted but precluded by other pending proposals. *Id.* § 1533(b)(3)(B). If FWS finds listing is warranted, it must publish a proposed listing rule in the Federal Register. *Id.* § 1533(b)(3)(B)(ii). If FWS finds listing is not warranted, as it did in this case, that determination must be published in the Federal Register and is subject to judicial review. *Id.* § 1533(b)(3)(B)(iii), (C)(ii).

FWS must make its listing determinations “solely on the basis of the best scientific and commercial data available to [it] after conducting a review of the status of the species and after taking into account those efforts, if any, being made by any State or . . . any political subdivision of a State” to protect such species. *Id.* § 1533(b)(1)(A); *see also* 50 C.F.R. § 424.11(b), (f). By directing FWS to base its listing decision on the best available data—as opposed to “conclusive” or “definitive” data—Congress meant for FWS “to take preventive measures before a species is conclusively headed for extinction.” *Defs. of Wildlife v. Babbitt*, 958 F. Supp. 670, 679-80 (D.D.C. 1997).

FACTUAL AND PROCEDURAL BACKGROUND

I. The Eastern Hellbender

The eastern hellbender is the largest salamander in North America. AR 2421. Averaging 50 cm in length with a record length of 74 cm, the hellbender is normally brown in color, sometimes mottled with dark splotches, and is characterized by “a heavily-wrinkled, dorso-ventrally flattened body, keeled tail, and a large flat head.” AR 243, 260, 2775. Despite its ominous name, the eastern hellbender is a harmless and non-venomous species with a variety of colorful nicknames including water dog, mud puppy, old lasagna sides, spring lizard, and grampus. AR 6455. Hellbenders “exhibit slow growth, delayed maturity, and low fecundity.” AR 2775. They are a long-lived species, with at least a 30-year life span, and are believed to sometimes live more than 50 years. AR 91, 200, 2792.

Hellbenders are “secretive habitat specialists, typically occupying cool, clear streams with large rocks or crevices that provide shelter, feeding, and nest sites.” AR 2182, 2775, 7635. They depend on their highly vascularized lateral skin folds for respiration, which generally limits the species “to fairly cool environments with well oxygenated water.” AR 7635. Due to these

specialized habitat requirements, the hellbender is considered “an indicator of good stream and river quality.” AR 2421. But these requirements also make the species “very sensitive to disturbance,” and thus, “[c]hanges to stream systems, specifically anthropogenic alterations, often result in declines or extirpation of hellbenders.” AR 2776. The hellbender’s unique appearance, behavioral traits, and other intangible but arguably charismatic qualities have helped attract high levels of scientific interest, *see, e.g.*, AR 2769 (“hellbenders are biologist magnets.”), as well as informal public efforts to help further conservation of the species. AR 259 (describing augmentation effort but noting it “doesn’t solve the underlying habitat issues.”).

II. The Precipitous, Drastic Decline of the Eastern Hellbender

The eastern hellbender was historically “widespread” across 15 eastern and midwestern states. AR 76. The species’ range runs the length of the Appalachian Mountains, from northern Georgia to southern New York, and also includes several midwestern states. In the 1990s, “experts began noticing widespread losses” of the species’ populations. AR 200. These experts “often characterize” these declines “as severe or drastic.” AR 102; *see also* AR 182 (noting that “major land use changes occurred in the 1990s, with precipitous declines” observed during that period); AR 308 (“Recently, hellbender populations have experienced precipitous declines throughout their range, including areas that historically contained large, stable populations exhibiting no explicit signs of decline.”); AR 308 (declines are “especially severe” in Midwest, with continued population declines in Ohio and Missouri, extirpation in Illinois, and reduction to a single drainage in Indiana). FWS estimates that 40 percent of the eastern hellbenders’ known historic populations are already extirpated. AR 200; *see also* AR 2767 (“estimated declines of up to 77 percent recently documented in some populations.”).

The range-wide decline of hellbender populations has been driven by “numerous factors including river impoundments, poor water quality and siltation, persecution, illegal collection, and disease.” AR 2182. Sedimentation is one of the primary factors most impacting the status of the species throughout its range, arising from multiple sources, including logging of upland forests, clearing of riparian vegetation, oil and gas development (including enhanced recovery techniques such as hydraulic fracturing), roads, pipelines, agriculture, livestock grazing in streams, residential development, off-road vehicles, and more frequent and intense flooding events exacerbated by climate change. AR 255, 848, 849, 86, 8761. Increased sediment fills the interstitial spaces in cobble beds that are used as shelter by larval and juvenile hellbenders as well as their prey, and sediment can also impact habitat use and migration by adults by burying shelter and nest rocks. AR 255.

Dam construction and other stream impoundments have also caused hellbender populations to decline and disappear throughout much of their range. AR 114, 3752. Because hellbenders breathe primarily through their skin, they depend on well-oxygenated water. AR 3752. Dams stop swift water flow and submerge riffles, causing dissolved oxygen levels to drop and rendering the habitat unsuitable for hellbenders. *Id.* Impoundments also fragment hellbender habitat, blocking the flow of immigration and emigration between populations. *Id.*

Coal mining, streambed gravel mining, and other forms of mining destroy hellbender habitat and degrade water quality through toxic pollution (often caused by acid mine drainage), decreased pH levels, and increased siltation and sedimentation. AR 112-13, 116-17.

Hellbenders have suffered direct mortality through collection for scientific study and anatomy courses, the illegal pet trade, bounty hunts by sportsman’s clubs, and persecution by anglers holding the misconception that hellbenders impact fish populations, when their primary

prey is in fact crayfish. AR 121-24. In addition, non-native fish widely stocked for sports fishing often prey on young or larval hellbenders. AR 126.

Compounding the many threats to the hellbender's continued existence, long-lived species such as eastern hellbenders are slow to recover from perturbations because of their delayed maturity, low fecundity, and other factors. AR 122. Many of the remaining hellbender populations largely consist of older animals and have little to no recruitment of new animals, suggesting that reproduction is no longer occurring. AR 149. Even when reproduction is occurring, hellbenders' small, isolated populations prevent healthy genetic flow. AR 125-26. Because hellbenders are long-lived, these struggling populations can persist for years before blinking out, masking impending extirpations until they are too late to reverse. AR 102, 200.

III. Plaintiffs' Listing Petition and FWS's Warranted but Precluded Finding

On April 20, 2010, the Center and other organizations petitioned FWS to list the eastern hellbender as threatened or endangered under the ESA. On September 27, 2011, FWS issued a positive 90-day finding for the eastern hellbender, determining the petition presented substantial scientific information indicating that listing may be warranted because of "habitat loss and overuse," as well as other factors. 76 Fed. Reg. 59,836 (Sept. 27, 2011).

In June 2013, the Center sued to compel FWS to issue the required but overdue 12-month finding. *Ctr. for Biological Diversity v. Jewell*, No. 1:13-cv-00975-EGS (D.D.C.). On September 23, 2013, the Center and FWS entered a stipulated settlement agreement that FWS would submit to the Federal Register a 12-month finding on the petition to list the hellbender by September 30, 2018. *Id.* at Docket No. 7.

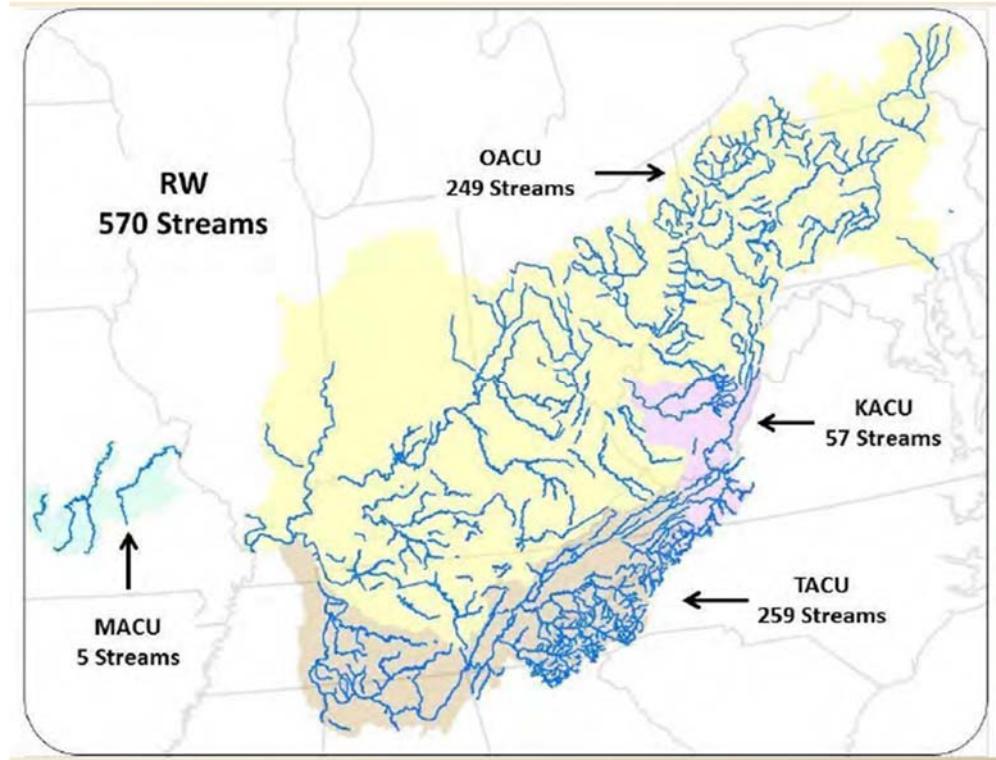
IV. FWS's Status Review Process

As part of its duty to conduct a status review to inform its listing decision, FWS prepared a “Species Status Assessment” (“SSA”), which FWS intends to “provide[] a thorough account of the subspecies’ overall viability.” 84 Fed. Reg. 13,223, 13,226 (Apr. 4, 2019); AR 4. To assess viability, the SSA analyzes the “3Rs”—a species’ resiliency (ability to withstand stochastic events), representation (ecological diversity across the species’ range and ability to adapt to changing conditions), and redundancy (ability to withstand catastrophic events). *Id.*

As a first step in developing the SSA, FWS designated nine staffers as the “SSA Core Team.” AR Supp. 565, 2361. In August 2017, the SSA Team then convened eleven outside experts (7 biologists and 4 conservation geneticists) for a two-day “expert elicitation process.” AR 178-197; AR 250.

A. The Four “Adaptive Capacity Units,” Historical Condition, and Current Population Status

Based on the analysis of Hime et al. (2016), AR 6562-6580, FWS’s SSA analysis divides the eastern hellbender’s range into four “adaptive capacity units.” AR 4, 97-98. The divergences within these four lineages may be millions of years old, with a high genetic variation between the lineages. AR 97. As depicted in the map below, these four units are: 1) Missouri River drainage, 2) Ohio River-Susquehanna River drainages, 3) Tennessee River drainage, and 4) Kanawha River drainage. AR 97, 249.



AR 249.

FWS estimates that 570 eastern hellbender populations historically existed across its range, distributed throughout the ACUs as follows:

- (1) Ohio River-Susquehanna: 249 populations located in Illinois (4), Indiana (10), Kentucky (65), Maryland (4), New York (12), Ohio (48), Pennsylvania (80), Tennessee (16), and West Virginia (19);
- (2) Tennessee River: 259 populations located in Alabama (16), Georgia (51), Mississippi (2), North Carolina (132), Tennessee (71), and Virginia (11);
- (3) Kanawha: 57 populations located in North Carolina (18), Virginia (18), and West Virginia (21); and
- (4) Missouri: 5 populations, all located in Missouri. AR 745.

FWS estimates that of the 570 populations, approximately 40 percent (225 populations) are already extirpated and approximately 60 percent (345 populations) are still extant. Of the 345

populations predicted to be extant, nearly two-thirds (218 populations) are declining, while 127 populations are considered healthy. AR 251-253. However, of the 570 historic eastern hellbender populations, the Service can now identify only 35 remaining *known* populations that are considered healthy. AR 104.

B. The Expert Elicitation Process and “Future Scenario Analysis”

Prior to the August 2017 expert meeting, the SSA Team “selected 11 [influences] to incorporate in the future scenario analysis.” AR 181, 875-890. As depicted below, except for augmentation, these “influences” are comprised of myriad negative stressors to the species.

Table 3. The primary influences identified and analyzed by the experts.

Influence	Description
Augmentation	captive breeding, head starting
Sedimentation	off-road vehicles, deforestation, development, gravel mining, impoundments
Climate change	extreme droughts, floods, water temp
Mortality	collection, persecution, anglers, recreationists, gravel mining
Water quality degradation	development, deforestation
Overabundance predators	trout, walleye, river otters
Disease & pathogens	Bd, ranavirus, leeches, trypanosomes
Habitat disturbance	scientific collection, recreationists, off-road vehicles
Invasive species	rusty crayfish
Small population effects/isolation	environmental and demographic stochasticity
Destruction of habitat	gravel mining, rock removal, impoundments

AR 183.

Using these 11 influences, the experts conducted a “future scenario analysis.” AR 181, 261. In this analysis, the experts were asked to project the composite change in the 11 identified influences on the hellbender within their geographic area of expertise at 10, 25, and 50 years in the future under three “scenarios”: “reasonable worst plausible” (“RWP”), “reasonable best plausible” (“RBP”), and “most likely” (“ML”). AR 261-262; AR Supp. 13. FWS ultimately ignored the 50-year projections because “[a] few experts were uncomfortable forecasting beyond 15 years.” AR Supp. 8, 13, 472. The experts were then asked to predict each of the 160 known population’s response to these influences and whether the population was expected to be “stable,

recruiting” (“SR”), “declining” (“D”), “functionally extirpated” (“FX”), or “presumed extirpated” (“PX”). AR 185, 263. Finally, the experts were asked to describe each of the 410 hellbender populations with unknown status as stable, recruiting, declining, or extirpated. AR 186.

These “future scenarios” form the ultimate heart of FWS’s decision-making analysis and determination that listing the eastern hellbender is not warranted. But unlike a 2006 effort where hellbender experts used a simulation software program to examine the viability of hellbender populations 75 years into the future, AR 5301-5230, the “future scenarios” at issue here are not based on statistical or analytical models. For example, FWS did not present the experts with projections of development levels within hellbender habitat in the next 15 years and ask how such projected development would impact the species. Instead, FWS asked the experts to make their *own predictions* of the future extent of sedimentation, climate change, habitat disturbance, and other stressors on the hellbender. See AR 184, Table 5 (predicted change in magnitude of impacts from influences under the three future scenarios 10 and 25 years into the future).

C. The Draft SSA

Using the results of the expert elicitation process as a foundation, FWS completed a draft SSA in January 2018. AR 720-813. The draft SSA summarized the results of the expert elicitation process as follows:

“The number of population extirpations is predicted to increase over the next 25 years under both the RBP (47%) and RWP (71%) scenarios. Under the RWP scenario, predicted population losses lead to state-wide (functionally and presumed) extirpations in 40% (8) of historical states, while no state-wide extirpations are projected under the RBP scenario. The number of healthy populations is predicted to increase by 41% (51) over the next 25 years under the RBP scenario, while the number decreases by 57% (72) under the RWP scenario.”

Table 6.3. Predicted number of extant populations by State. Values exclude UR, UT, and US populations. The predicted number is given for 3 future scenarios: RWP = reasonable worst plausible, ML = most likely, RBP = reasonable best plausible. *Note: some populations occur in more than 1 state, thus the sum across states exceeds the ACU tallies in Table 6.2.*

			Yr 10								
MACU			OACU		TACU		KACU				
	RWP	RBP		RWP	RBP		RWP	RBP		RWP	RBP
MO	3	5	IL	0	2	AL	0	1	NC	3	3
			IN	0	1	GA	6	7	VA	0	0
			KY	1	4	MS	0	0	WV	2	2
			MD	0	1	NC	27	29			
			NY	0	5	TN	5	18			
			OH	0	7	VA	3	4			
			PA	3	12						
			TN	0	0						
			WV	2	4						
Yr 25											
MACU			OACU		TACU		KACU				
	RWP	RBP		RWP	RBP		RWP	RBP		RWP	RBP
MO	3	5	IL	0	2	AL	0	1	NC	0	5
			IN	0	1	GA	6	7	VA	0	0
			KY	1	4	MS	0	0	WV	1	3
			MD	0	1	NC	25	25			
			NY	4	3	TN	5	15			
			OH	0	7	VA	2.5	4			
			PA	2	9						
			TN	0	0						
			WV	1	3						

AR 776.

In summarizing how the expert elicitation process had resulted in the “reasonably worst plausible” scenario predictions, the draft SSA stated that “[e]xperts described increasing water quality degradation and habitat degradation, small populations, climate change, disease, and unsuccessful population augmentations as factors contributing to RWP scenarios.” AR 774.

Under the RWP, “all experts predicted that composite influences negatively affecting the Eastern Hellbender would increase over the next 25 years.” AR 774. The draft SSA also concludes that all 4 of the ACUs are “likely” to be extirpated by a catastrophic event under the RWP. AR 787 (Ohio and Susquehanna ACU); AR 789 (Tennessee ACU); AR 790 (“Under the

RWP scenario, no healthy populations remain and extirpation of the [Kanawha] ACU is likely inevitable.”).

In contrast, under the “reasonably best plausible” scenario, “some experts predicted a reduction in overall negative influences . . . while others predicted an increase in negative influences, albeit a smaller increase than in the RWP scenario.” AR 774. The draft SSA describes “a few key assumptions” underlying the experts’ RBP predictions. First, “many of the RBP scenario predictions assume that ongoing and future population augmentation will be successful.” AR 792. FWS acknowledges, however, that “augmentation is still in its infancy and little data exist as to whether successful sustained reproduction and recruitment can be achieved and whether augmentation is logically possible at a broad scale.” AR 792; *see also* AR 272 (“Conservation is largely dependent on augmentation, the long-term success of which is unknown.”).

Similarly, “[m]any of the future RBP scenario predictions are contingent on threats being reduced and habitat conditions improving.” AR 792. Here as well, FWS admits that “[l]ittle data exist that provide evidence of reduced negative influences, such as sedimentation, water quality, degradation and improved stream conditions, over the next 25 years.” AR 792.

D. Peer Review of the Draft SSA

In February 2018, FWS circulated the draft SSA to approximately 80 contacts, including expert peer reviewers, Federal land management agencies, Native American tribes, States, and FWS Field Offices. AR 276-277, 717. FWS received approximately 23 responses. AR 277.

Two responders questioned the assumptions underlying the future scenarios, the lack of specific scenario definition, and the reliance on hellbender experts rather than statistical or analytical models to make predictions regarding the future extent of land use practices. AR 474

(“How were these estimates derived? On the surface it just seems like you guys were providing guesses. Was there a questionnaire or some sort of guidance? I also don’t imagine that most of the participants are really experts in these fields.”); AR 716 (“Generally speaking, it is reasonable to speculate that any given population of any species is likely to persist under the ‘reasonable best plausible’ scenario, if ‘best plausible’ implies mitigation of all adverse effects. The terms “reasonable worst plausible,” “reasonable best plausible,” and ‘most likely’ should be defined . . .”).

Several reviewers encouraged FWS to be more transparent and specific regarding the future scenario assumptions, especially as they related to augmentation and RBP scenarios. *See* AR 535 (“[P]erhaps mention that RBPs explicitly included adoption of broad scale mitigation strategies (BMPs, nest boxes, etc.) . . . Otherwise—it reads like they are the range of possibilities without any intervention to stop/reverse declines.”); AR 537 (asking FWS to make “explicit that these are not all hands off estimates.”); AR 547 (recommending that FWS “explicitly state that these projections were not all business as usual,” and instead, that “mitigation and intervention is key to some scenarios (such as RBP)”).

E. The Final SSA and Recommendation Meeting

FWS finalized the SSA on April 3, 2018, AR 287-382, in anticipation of an April 10, 2018 “recommendation meeting” with agency decisionmakers. AR 235. The final SSA is fundamentally similar to the draft SSA, although FWS removed state-level analysis and data in response to comments that the analysis was “confusing” and “complex.” AR 278.

The SSA and other presentation and summary materials provided by the SSA Team to FWS decisionmakers (AR 198-286) paint a grim picture for the future of the eastern hellbender across its current range. The existing threats driving the “precipitous” and “drastic” decline

already suffered by eastern hellbender populations are generally expected to increase in intensity. AR 200 (“While sedimentation and water quality are consistently the primary stressors acting on Eastern Hellbender populations in each of the ACUs, there are many other stressors acting singly or synergistically currently, and they are predicted to continue into the future.”).

The predicted increase in threats is expected to have an associated negative impact on hellbenders. Under the RWP scenario, 84 percent of the 345 remaining eastern hellbender populations are expected to be lost within the 25-year timeframe defined by FWS as the “foreseeable future,” with the large majority of that loss occurring in the next 10 years. AR 200. In total, the RWP projects the cumulative loss of more than 90 percent of historical hellbender populations.

These losses are expected rangewide. In the Missouri River ACU, the impact from existing threats, including “sedimentation, water quality degradation, disease and pathogens, and habitat disturbance,” are predicted to “exponentially increase over time.” AR 211. In the Kanawha River ACU, the threats that have already caused a 77 percent decrease in the number of historical populations “are predicted to increase under both RWP and RBP scenarios” and are expected to result the extirpation of the species from the ACU under the RWP. AR 203. In the Tennessee River ACU, “[t]he declines of the past are expected to continue,” and under the RWP Scenario, “huge increases in threats are anticipated across the ACU.” AR 205. And in the Ohio-Susquehanna River ACU, “[t]he past decline is predicted to continue,” and under the RWP, “there is a substantial increase in threats” in Ohio, Tennessee, and Indiana. AR 208.

The broad continued population losses expected across all ACUs are also expected at the state level, including the two states with the largest number of estimated currently extant

populations: North Carolina (119) and Pennsylvania (48). AR 750. In North Carolina, where “[w]e have a lot to lose,” impacts including “habitat degradation, water quality, sedimentation, small population size, climate change, and possibly diseases,” will “have increasing negative effects over time, acting synergistically.” AR 194. “No populations are currently thriving in developed areas,” and “without land protection and water quality improvements in these areas, habitat quality is expected to continue deteriorating over time.” AR 203. These negative impacts are “likely cumulative,” and it is “highly likely” that many streams will shift to declining or extirpated status in the foreseeable future. AR 194.

In Pennsylvania, “experts predict increasing negative impacts due to continued habitat degradation, water quality issues, sedimentation, small population effects, climate change, and possibly disease over time.” AR 208. Some Susquehanna River populations are already “close to extinction,” while some of the populations characterized by FWS as declining “will move down” to extirpation, and “some [stable populations] are likely to crash and move down to [extirpation].” AR 196.

The SSA Team provided the decisionmakers with an additional explanation regarding the “most likely” future scenario, explaining that despite the label, it is not really the “most likely.” *See* AR 198 (explaining the SSA does not present a single table for the “most likely” scenario because the chance of it occurring “is very low relative to all of the reasonable, plausible outcomes” and instead, the range between the worst- and best-case scenarios “represents all reasonable, plausible outcomes”).

V. FWS’s Eastern Hellbender Listing Denial

On April 4, 2019, FWS issued the 12-month finding concluding that listing the eastern hellbender as threatened or endangered under the ESA is not warranted. 84 Fed. Reg. 13,223;

AR 1-15. The determination is largely comprised of a summary of the SSA and its analysis of the three future scenarios. 84 Fed. Reg. at 13,226, AR 4 (“The following is a summary of the key results and conclusions from the SSA report.”); 84 Fed. Reg. at 13,228, AR 6 (“To assess the future number, health, and distribution of eastern hellbender populations, we asked species’ experts for their predictions of the changes in the numbers of stable recruiting, declining, functionally extirpated, and presumed extirpated populations . . . under three scenarios: Reasonable worst plausible, reasonable best plausible, and ‘most likely’ future plausible conditions.”).

In its Findings regarding the determination of the hellbender’s status throughout all of its range, FWS provides a brief, four-paragraph analysis concluding that “the stressors acting on the eastern hellbender and its habitat, either singly or in combination, are not of sufficient imminence, intensity, or magnitude” to warrant listing as threatened or endangered throughout all of its range. 84 Fed. Reg. at 13,230, AR 8. In its similarly brief Findings regarding determination of status throughout a significant portion of the range, FWS concludes that even if the Missouri ACU and Kanawha ACU are extirpated as predicted, their loss does not constitute a significant portion of the eastern hellbender’s range. 84 Fed. Reg. at 13,230.

STANDARD OF REVIEW

The Administrative Procedure Act (“APA”) provides the standard of review for FWS’s determination that listing the eastern hellbender under the ESA is not warranted. *Am. Wildlands v. Kempthorne*, 478 F. Supp. 2d 92, 96 (D.D.C. 2007).¹ Under Section 702 of the APA, an agency’s decision is subject to judicial review, and such decision must be set aside if it is

¹ Unless otherwise noted, internal citations and quotation marks are omitted from caselaw citations.

“arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.” 5 U.S.C. § 706(2)(A). An agency’s decision is arbitrary and capricious if it “has relied on factors which Congress has not intended it to consider, entirely failed to consider an important aspect of the problem, offered an explanation for its decision that runs counter to the evidence before the agency, or is so implausible that it could not be ascribed to a difference in view or the product of agency expertise.” *Motor Vehicle Mfrs. Ass’n v. State Farm Mut. Auto. Ins. Co.*, 463 U.S. 29, 43 (1983).

ARGUMENT

I. Plaintiffs Have Associational Article III Standing to Challenge the Listing Denial.

To satisfy the Constitution’s Article III standing requirements, a party must show that “(1) it has suffered an ‘injury in fact’ that is (a) concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the challenged action of the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision.” *Friends of the Earth, Inc. v. Laidlaw Env’t Servs. (TOC) Inc.*, 528 U.S. 167, 180-81 (2000). The Supreme Court has consistently recognized that “environmental plaintiffs adequately allege injury in fact when they aver that they use the affected area and are persons for whom the aesthetic and recreational values of the area will be lessened by the challenged activity.” *Id.* at 183 (quoting *Sierra Club v. Morton*, 405 U.S. 727, 735 (1972)). As demonstrated by the four attached affidavits, Plaintiffs have standing to bring this action because their members’ aesthetic, scientific, recreational, professional, and other interests are harmed by FWS’s determination that listing the eastern hellbender under the ESA is not warranted. *See generally* Decl. of Tierra Curry; Decl. of Daniel Estrin; Decl. of Will Harlan; Decl. of John Zaktansky; *Nat’l Wildlife Fed’n v. Norton*, 386 F. Supp. 2d 553, 559-60 (D. Vt.

2005) (“Plaintiffs’ members have an aesthetic and recreational interest in observing the gray wolf because they are involved in activities in and around the gray wolf’s habitat and have devoted substantial amounts of time in support of wolf recovery and in pursuit of the wolf throughout the Northeast.”); *Vt. Pub. Int. Rsch. Grp. v. U.S. Fish & Wildlife Serv.*, 247 F. Supp. 2d 495, 510 (D. Vt. 2002) (“[T]he affiants’ long-term and regular use and enjoyment of, and interest in protecting, Lewis Creek’s biodiversity, and in particular its rare species, sets them apart from the general public . . . Ongoing and future attempts to observe a species can be sufficient.”). An order from the Court vacating the not-warranted finding and ordering the Service to reconsider listing the eastern hellbender would redress those injuries. *Nat’l Wildlife Fed’n*, 386 F. Supp. 2d at 560.

II. FWS Failed to Articulate a Rational, Legal Basis for Its Eastern Hellbender Listing Denial.

FWS’s not-warranted determination concludes that “[b]ased on our review of the best available scientific and commercial information pertaining to the five factors, we find that the stressors acting on the eastern hellbender and its habitat, either singly or in combination, are not of sufficient imminence, intensity, or magnitude” to warrant listing as threatened or endangered throughout all or a significant portion of its range. 84 Fed. Reg. at 13,230. As detailed below, this conclusion is untethered from the SSA predictions and “future scenario” analysis, the best available scientific information, and other evidence before the agency, and is therefore arbitrary and capricious.

A. FWS’s Cursory Findings Ignored or Mischaracterized Conclusions of the “Reasonably Worst Plausible” Scenario Showing That the Eastern Hellbender is in Danger of Extinction Throughout its Range.

Under the RWP future scenario, the eastern hellbender will be reduced to 55 populations in 25 years, a decline of *more than 90 percent* from historical levels. AR 231. No healthy

populations will remain in the Missouri ACU or the Kanawha ACU. AR 231. The Ohio-Susquehanna ACU will be reduced to 15 healthy populations, an approximate 6 percent remnant of its historical estimated 249 populations. AR 231. The Tennessee ACU will be reduced to 40 healthy populations, or around 15 percent of its former 259 populations. AR 231. And *within ten years*, the species will be extirpated from nearly two-thirds (9 of 15) the states within its range: Alabama, Illinois, Indiana, Maryland, Mississippi, New York, Ohio, Tennessee, and Virginia. AR 776.

The loss of populations diminishes the species' viability, which increases its risk of extinction. AR 142 ("Eastern Hellbender viability is dependent on its ability to withstand environmental stochasticity, periodic disturbances, anthropogenic stressors, catastrophes, and novel changes to its environment."). In the "3R" parlance at the core of FWS's SSA process, which is meant to describe a species' viability (ability to survive) through three conservation biology principles, the overwhelming predicted reduction of the species' representation (populations) across its range will also reduce the hellbenders' redundancy (ability to withstand catastrophic events) and resiliency (ability to stochastic events). AR 233, 248.

The SSA's viability analysis recognizes the severity of redundancy loss in particular, concluding that the extirpation of *each* of the four ACUs is *likely* in the event of catastrophic events. AR 142 ("[C]oupled with the lack of healthy populations, the potential for [Missouri] ACU-wide extirpation due to disease outbreak is likely under the RWP scenario."); AR 143 (In Ohio, "ACU-wide extirpation is still plausible within the next 25 years due to the threat from a disease epidemic under the RWP scenario."); AR 144 ("[U]nder the RWP scenario, the number and spatial extent of populations are predicted to decline, and thus, the risk of ACU-wide extirpation is likely" in the event of disease outbreak.); AR 145 ("[C]oupled with the lack of

healthy populations, the potential for Kanawha ACU-wide extirpation due to disease outbreak is likely under the RWP scenario.”). Indeed, FWS believes that two catastrophic events *today* would be likely to extirpate the Missouri, Ohio, and Kanawha River ACUs, and is as likely as not to extirpate the Tennessee River ACU:

Table 7.2. Likelihood of loss of ACUs from two catastrophic events under current conditions and predicted future conditions. Note: Unlikely (U, green) = 0-33% probability; About As Likely As Not (A, yellow) = 33-66% probability; Likely (L, red) = 66-100% probability (IPCC 2014).									
	MACU		OACU		TACU		KACU		
	RWP	RBP	RWP	RBP	RWP	RBP	RWP	RBP	
Disease	L	A	L	U	A	U	L	A	
Chemical Pollution	U	U	N/A	N/A	N/A	N/A	U	U	
10-Year Predictions									
	MACU		OACU		TACU		KACU		
	RWP	RBP	RWP	RBP	RWP	RBP	RWP	RBP	
Disease	L	A	L	U	A	U	L	A	
Chemical Pollution	U	U	N/A	N/A	N/A	N/A	U	U	
25-Year Predictions									
	MACU		OACU		TACU		KACU		
	RWP	RBP	RWP	RBP	RWP	RBP	RWP	RBP	
Disease	L	A	L	U	L	U	L	A	
Chemical Pollution	U	U	N/A	N/A	N/A	N/A	U	U	

AR 146.

FWS’s not-warranted determination is based on cursory findings that are directly contrary to these projections.² In explaining its conclusion that the eastern hellbender is not in danger of extinction throughout its range, the agency states:

“The risk of exposure to catastrophic events varies across the eastern hellbender’s range. While the subspecies’ redundancy is lower than in the past, the geographically wide distribution of populations, as well as the low to moderate risk of a catastrophic event, guards against catastrophic losses rangewide. We find that the predicted persistence of healthy populations across multiple ACUs provides redundancy, resiliency, and representation levels that are likely sufficient

² FWS listing decisions typically “incorporate[] by reference a Species Assessment Form ... which contains a more detailed explanation of the basis for FWS’s decision.” *Ctr. for Biological Diversity v. U.S. Fish and Wildlife Serv.*, 488 F. Supp. 3d 1219, 1226 (S.D. Fla. 2020). In this case, FWS has not prepared a Species Assessment Form, and thus the extent of its Findings is contained entirely in the April 4, 2019 determination.

to sustain the subspecies now and into the future, and we conclude that the eastern hellbender has a low risk of extirpation.”

84 Fed. Reg. at 13,230.

FWS’s rationale is arbitrary in several respects. Most evidently, it does not acknowledge the agency’s own findings that, regardless of their likelihood, two catastrophic events would be likely to cause an extirpation of each of the 4 ACUs, instead stating only that the risk from catastrophic events “varies” by ACU. *Id.* FWS’s Finding provides no qualification or explanation as to how the likelihood of extirpation is discounted, and the agency thus failed to consider an important aspect of the problem. *See N. Spotted Owl v. Hodel*, 716 F. Supp. 479, 483 (W.D. Wash. 1988) (“Here, the Service disregarded all the expert opinion on population viability, including that of its own expert, that the owl is facing extinction, and instead merely asserted its expertise in support of its conclusions.”).

The agency’s cursory and circular proclamation that the hellbender’s “redundancy, resiliency, and representation levels” are “sufficient to sustain the subspecies now and into the future” is also directly counter to the SSA predictions that catastrophes are likely to result in ACU extirpations (*i.e.*, the species’ redundancy is insufficient to sustain the species now and into the future). This type of internal contradiction is the essence of arbitrary and capricious decision-making. *Greater Yellowstone Coal., Inc. v. Servheen*, 672 F. Supp. 2d 1105, 1120 (D. Mont. 2009), *aff’d in part, rev’d in part*, *Greater Yellowstone Coal., Inc. v. Servheen*, 665 F.3d 1015 (9th Cir. 2011) (“Where the agency’s conclusions contradict the science, the conclusions are not reasonable and the Court need not defer to the agency’s decision.”).

The arbitrariness of FWS’s disregard of the massive loss of hellbender range that has already occurred and its expected continued decline is further highlighted by the fact that the hellbender fits squarely within one of the four “basic categories” of “[s]pecies that FWS has

determined to be in danger of extinction, and thus appropriately listed as endangered”; that is, “species with still relatively widespread distribution that have nevertheless suffered ongoing major reductions in its numbers, range, or both, as a result of factors that have not been abated.” Memorandum from Acting FWS Director Dan Ashe Re: Determination of Threatened Status for Polar Bears,” at 4 (Dec. 21, 2011) (“Polar Bear Memo”).³ Here, the eastern hellbender is predicted to suffer population declines in excess of 90 percent in the face of numerous unabated threats.

The RWP projections were a flashing warning light to FWS that the hellbender is in danger of extinction throughout its range. But in its decision, FWS ignored that warning and cast aside its own 3R viability framework with the sanguine reassurance that “numerous” populations of hellbender will exist in 25 years, across “multiple” ACUs. 84 Fed. Reg. at 13,230. By ignoring or mischaracterizing its own key conclusions and making determinations contradicted by the best available science and the record before the agency, FWS acted unlawfully in issuing the not-warranted determination. *Greater Yellowstone*, 665 F.3d at 1023 (stating that agency must articulate a rational connection between the facts found and the conclusions made).

B. The Assumptions Underlying the “Reasonably Best Plausible” Future Scenario Are Counter to the Best Available Science and the Evidence Before the Agency.

The RBP future scenario is a central pillar of FWS’s not-warranted determination—although 10 of the 11 “influences” considered during the expert elicitation process are negative

³ Available at: <https://www.fws.gov/sites/default/files/documents/polar-bear-listing-clarification-memo-2010-12-22.pdf>. The memorandum “does not represent a new interpretation of the statute and is not a prospective statement of agency policy,” but provides a detailed analysis of the agency’s general understanding of the meaning of “in danger of extinction” under the text, structure, policy objectives, and legislative history of the ESA. Polar Bear Memo, at 2.

stressors on the species, FWS concluded that the one positive influence, augmentation and conservation efforts, would be sufficient to not only stem but to *reverse* the hellbender's ongoing population declines. *See* AR 141 (predicting the Ohio River-Susquehanna River ACU will have 84 healthy populations in 10 years, compared to 42 currently healthy populations, and predicting the Tennessee River ACU will have 77 healthy populations in 10 years and 91 healthy populations in 25 years, compared to 68 currently healthy populations).

FWS used the RBP, along with RWP, to establish the range of the future population health of the eastern hellbender. According to FWS, “[f]or a number of healthy populations, the ‘most likely’ are neither skewed towards the RBP nor RWP scenario.” AR 147. In many specific instances, however, FWS concludes that the “most likely” future scenario trends closer to the RBP than the RWP. For example, with respect to predicted future extirpated populations, FWS states that the “most likely” future scenario “lies closer to the values for the RBP scenario” in the Tennessee ACU and Kanawha ACU, “is skewed toward the RBP scenario in the [Ohio ACU]”, and is “at the midpoint of the RWP and RBP scenarios in the [Missouri] ACU.” AR 148.

FWS’s conclusions regarding the RBP have no rational basis and are arbitrary. As FWS states in the SSA, a “key assumption” is that “many of the best-case scenario predictions are contingent on threats being reduced and habitat conditions improving.” AR 148. This is true across the eastern hellbender’s range and all ACUs. *See, e.g.,* AR 203 (in North Carolina, “aggressive habitat restoration (primarily to reduce sediment load and improve water quality), especially on agricultural lands, is necessary for declining populations to become stable recruiting,” and “[r]iparian reforestation of at least 30 m (100 ft) on each side of the stream, as well as riparian preservation and restricting livestock access to streams, are necessary to improve populations.”); AR 205 (in Tennessee River ACU, “[a]ugmentations, along with

restoring streams to reduce sediment load and reconnect floodplain function, establishing protective riparian buffers, protecting land along inhabited streams and preventing livestock access to streams, are needed for declining populations to become healthy.”); AR 205 (“[W]ithout significant habitat improvement and population augmentation, extirpation is likely” in Alabama, but experts “are unaware of ongoing conservation initiatives” in the state); AR 208 (“RBP is contingent upon successful augmentation and habitat enhancement” in the Ohio and Susquehanna River ACU states of Indiana, New York, Ohio, and Pennsylvania).

FWS, however, repeatedly admits that “[l]ittle data exist that provide evidence of reduced negative influences, such as sedimentation, water quality, degradation and improved stream conditions, over the next 25 years.” AR 148; 84 Fed. Reg. at 13,229. Moreover, the agency acknowledges that successful augmentation depends on habitat protections that do not exist. AR 259, 272. Because the assumptions underlying the RBP are demonstrably incorrect, FWS’s incorporation of the RBP scenario into its decision-making, including but not limited to its conclusions that the “most likely” future scenarios hew closer to the RBP, is arbitrary and capricious. *See Ctr. for Biological Diversity v. Zinke*, 900 F.3d 1053, 1071 (9th Cir. 2018) (“FWS’s reliance on . . . fish ladders as evidencing a change in the status quo without any studies finding that these measures will aid migration is arbitrary and capricious—even if the ladders aid the arctic grayling in migrating to tributaries, as this would be of little value if the water in the tributaries is too warm.”); *Defs. of Wildlife v. Babbitt*, 958 F. Supp. at 681-82 (FWS “acted arbitrarily and capriciously in basing its decision not to list the Canada lynx on glaringly faulty factual premises.”).

III. FWS’s Decision Unlawfully Relied on Unproven or Uncertain Future Conservation Measures.

As addressed in Section II.B *supra*, FWS’s RBP future scenario arbitrarily relied on the potential promise of unproven conservation measures as an assumption underlying the scenario’s rose-tinted future projections. Building an unproven assumption into FWS’s “future scenarios,” and then relying on those scenarios to justify denying protection to the eastern hellbender, also amounts to an end run on the ESA’s prohibition of reliance on uncertain future measures in listing decisions.

Courts have historically noted that because ESA Section 4(b)(1)(B), 16 U.S.C. § 1533(b)(1)(B), “speaks only in the present tense in terms of efforts, if any, being made, and not future efforts which have yet to be made,” that section “cannot reasonably be interpreted to include future efforts, whether regulatory or non-regulatory.” *Or. Nat. Res. Council v. Daley*, 6 F. Supp. 2d 1139, 1153 (D. Or. 1998). There, plaintiffs challenged the National Marine Fisheries Service’s (“NMFS”) decision not to list the Oregon Coast coho salmon under the ESA, in large part “on the expectation that the recently adopted Oregon Coastal Salmon Restoration Initiative (“OCSRI”) would reverse the decline” of the species. The court first noted that “[t]he few courts that have addressed this issue have concluded that reliance on future actions is not permitted by the ESA.” *Id.* (citing *Biodiversity Legal Found. v. Babbitt*, 943 F. Supp. 23 (D.D.C. 1996) and *Sw. Ctr. for Biological Diversity v. Babbitt*, 939 F. Supp. 49 (D.D.C. 1996)). The court concluded that it “finds persuasive the reasoning in these cases and similarly concludes that according to the plain language of the ESA, the Secretary may not rely on plans for future actions to reduce threats and protect a species as a basis for deciding that listing is not currently warranted. The NMFS may only consider conservation efforts that are currently operational, not those promised to be implemented in the future.” *Id.* at 1154.

Subsequent to the *Daley* decision, FWS adopted its Policy on Evaluation of Conservation Efforts When Making Listing Determinations, allowing consideration of future formalized conservation efforts where there is a high degree of certainty they will be implemented and effective. 68 Fed. Reg. 15,100. In *Survivors v. United States DOI*, which involved a challenge to FWS's denial of protections to the bi-state grouse, the court noted that *Daley* and other cases were decided before PECE, and it accepted the “underlying premise of PECE,” which “is that the ESA requires FWS to consider both current actions that affect a species’ status and sufficiently certain *future actions*—either positive or negative—that affect a species status.” 321 F. Supp. 3d 1011, 1058 (N.D. Cal. 2018) (emphasis in original) (quoting 68 Fed. Reg. at 15,114). After a detailed discussion of the conservation measures at issue in that case, however, the court found the analysis inadequate “because it does not offer any basis for concluding that the conservation efforts described . . . are sufficiently certain to be effective.” *Id.* at 1058-66.

Here, there are *no* proposed formalized conservation efforts or other future actions to even consider or debate in terms of their effectiveness or likelihood of implementation. The eastern hellbender is, for the time being, largely on its own, with no proposed formalized conservation efforts or other future actions at any governmental level. *See* Defs.’ Answer, Docket No. 21, at ¶ 71 (“Aver that the PECE is an evaluation of formalized conservation efforts that are not applicable to the analysis for the eastern hellbender because FWS had no formal conservation agreements or plans to evaluate.”).

IV. FWS Failed to Consider the Adequacy of Existing Regulatory Mechanisms.

Despite the many threats facing the eastern hellbender, the number of states the species occurs in, and the mix of federal, state, and private lands upon which remaining members of the species depend, FWS’s 12-month finding also fails to consider the inadequacy of existing

regulatory mechanisms, one of the five specific statutory factors that the agency must address when making a listing decision. 16 U.S.C. § 1533(a)(1)(D). FWS has construed “regulatory mechanisms” to include “*e.g.*, laws, regulations, ordinances.” 68 Fed. Reg. at 15,115. This analysis is simply absent from FWS’s not-warranted determination.

Defendants state in their Answer that “[b]ecause FWS did not find that other factors contained in 16 U.S.C. § 1533(a)(1) were causing the species to be endangered or threatened, it did not need to evaluate the effect of regulatory mechanisms on the stressors listed under the other four factors.” Docket No. 21, at ¶ 73. FWS’s interpretation of law is incorrect. The adequacy of existing regulatory measures is one of five specific factors FWS *must* address in making listing decisions under the plain language of the ESA. Although this determination is “inextricably linked” to FWS’s threat determinations, *Friends of Blackwater v. Salazar*, 691 F.3d 428, 436 (D.C. Cir. 2012), FWS is not absolved of considering this factor in circular fashion simply because it arrived at a not-warranted determination, particularly for a species where FWS has identified multiple serious but unabated threats.

For example, in *Rocky Mountain Wild v. U.S. Fish & Wildlife Service*, FWS analyzed the regulatory mechanisms “across four states, four federal agencies, and tribal lands,” and concluded that adequate regulatory mechanisms were in place to protect the white-tailed prairie dog. No. CV 13-42-M-DWM, 2014 U.S. Dist. LEXIS 177042, 2014 WL 7176384 (D. Mont. Sept. 29, 2014). In response to plaintiff’s challenge to this decision, the court found that “not many regulatory protections are currently extended to the prairie dog,” but that some regulations adequately addressed threats, including recreational shooting. *Id.* at *29. In contrast, the court noted that FWS had determined that oil and gas development was “widespread within the species’ range,” but that FWS’s Finding did “not address these concerns.” *Id.* at *29-30. The

court thus concluded that “[i]n the absence of existing regulatory mechanisms and without the ability to rely on hopes for future regulation, the Service is left with little justification for its findings that regulatory mechanisms as they relate to oil and gas development are adequate.” *Id.* at *31.

Here, FWS has admitted it did not make *any* findings regarding the adequacy of regulatory mechanisms addressing the myriad stressors facing the eastern hellbender. FWS’s failure to address the adequacy of existing regulatory mechanisms is further notable in light of the agency’s RBP predictions that there will be more hellbender populations in many areas within the foreseeable future. These predictions not only baselessly assume that augmentation will increasingly succeed in putting hellbenders back into creeks, but the best available science shows that the ultimate success is dependent on better streamside protections that do not today exist. *See, e.g.*, AR 715 (“Augmentation of any remnant populations in Alabama by introducing captive-bred individuals makes no material contribution to recovery of the species unless and until habitat of sufficient quality is available to support survival and recruitment.”).

V. FWS’s Conclusion That the Eastern Hellbender Is Not Endangered in a Significant Portion of Its Range Is Arbitrary.

The ESA defines an “endangered species” as “any species which is in danger of extinction throughout all or a significant portion of its range.” 16 U.S.C. § 1532(6). Accordingly, a species must be listed as endangered either because it is in danger of extinction “throughout all” of its range *or* because it is in danger of extinction in a “significant portion of its range.” *Id.* FWS’s rationale for finding that the hellbender is also not endangered in a significant portion of

its range (“SPR”) is also directly counter to the best available data and evidence before the agency.⁴

FWS acknowledges that the Missouri and Kanawha River ACUs are likely to be extirpated, but nonetheless concludes that the loss of 2 of 4 ACUs does not constitute an SPR, reasoning that “historically and currently, these two units represent a small proportion (10 percent currently) of the total populations and have a small spatial extent.” 84 Fed. Reg. at 13,230. It argues that the remaining 2 lineages would “guard[] against catastrophic losses rangewide.” *Id.* at 13,229. FWS thus concludes that “[i]f both of these units were extirpated . . . the loss of this portion of the subspecies’ range would still leave sufficient resiliency, redundancy, and representation in the remainder of the subspecies’ range such that it would not notably reduce the viability of the subspecies.” *Id.* at 13,231.

FWS’s dismissal of the anticipated loss of the Missouri and Kanawha ACUs is irreconcilable with the best available scientific information and the record before the agency that the Missouri and Kanawha River ACUs are significantly genetically distinct. As stated by Hime et al. (2006), the primary study FWS relies upon for the ACU-level analysis, the authors’ initial conclusion is that that hellbenders between the ACUs are in fact so genetically divergent that they comprise “five distinct species which are each on their own evolutionary trajectories.” AR 6574. FWS’s determination that the loss of Missouri and Kanawha ACUs are not a SPR ignores this information and is thus arbitrary. The agency’s apparent willingness to deny protections to two populations that will likely soon be recognized as distinct species (*i.e.*, its willingness to let those species go extinct) is also radically counter to the ESA’s purposes. *Tenn.*

⁴ If the Court upholds Plaintiffs’ arguments regarding the hellbender’s status in “all” of its range, the Court need not address whether the hellbender is endangered in an SPR.

Valley Auth. v. Hill, 437 U.S. at 194 (“Congress has spoken in the plainest of words, making it abundantly clear that the balance has been struck in favor of affording species the highest of priorities, thereby adopting a policy which it described as institutionalized caution.”).

Moreover, by focusing its SPR analysis solely at the ACU level, FWS ignored several other levels of analysis that much more accurately reflect the true extent of the eastern hellbender’s anticipated range loss. Most obviously, FWS ignores its own determinations that more than 90 percent of the species’ populations will be eliminated within the foreseeable future under the RWP scenario, and it makes no determination as to whether this loss constitutes a significant portion of the hellbender’s range. AR 231.

The failure to address risk of extinction at a population level was noted by multiple reviewers on the draft SSA. AR 549 (“I got a bit confused here. If I am reading this correctly . . . the analysis shifts from a stream level to state level approach?? This seems like a pretty coarse approach?”). One reviewer commented that the “best data currently available” is the stream-level data. AR 549, 697 (explaining that using “watershed unit . . . occupancy to estimate changes in the spatial extent of area occupied by the species . . . would be more biologically relevant and could provide a more robust quantitative measure of gains/losses in representation under the various scenarios discussed.”).

FWS did not, however, even address SPR at the “coarse” state level. Thus, even though the agency predicts that the species will be extirpated from 9 states (nearly two-thirds of its historic 15-state range) within the next 10 years, FWS’s SPR analysis simply makes no mention and provides no acknowledgment of this loss, failing to analyze whether the predicted disappearance of the hellbender in Alabama, Illinois, Indiana, Maryland, Mississippi, New York, Ohio, Tennessee, and Virginia constitutes a SPR.

Plaintiffs acknowledge that there is no bright-line test of population or habitat loss percentage that compels listing. See *Defs. of Wildlife v. Norton*, 258 F.3d 1136, 1143 (9th Cir. 2001) (“[W]ere a bright-line percentage appropriate for determining when listing was necessary, Congress could simply have included that percentage in the text of the ESA.”). However, by failing entirely to consider whether this overwhelming loss of populations or the species’ extirpation from nearly two-thirds of its historic states as part of its SPR analysis, FWS failed to consider an important aspect of the problem. *Tucson Herpetological Soc’y v. Salazar*, 566 F.3d 870, 876-77 (9th Cir. 2009) (FWS must “develop some rational explanation for why the lost and threatened portions of a species’ range are insignificant before deciding not to designate the species for protection.”).

Finally, by concluding that the loss of the Missouri and Kanawha ACUs do not constitute an SPR because “it would not notably reduce the viability of the subspecies,” 84 Fed. Reg. at 13,231, FWS adopts an approach to “significance” that is functionally identical to its prior unlawful SPR definitions. See *Ctr. for Biological Diversity v. Jewell*, 248 F. Supp. 3d 946, 957-58 (D. Ariz. 2017). FWS has repeatedly attempted to interpret “significant” so that “the only circumstance in which a species would be in danger of extinction in a significant portion of its range is one in which it was in fact in danger of extinction throughout all of its range.” *Survivors*, 321 F. Supp. 3d at 1071 (quoting previously invalidated policy). Courts have consistently rejected these interpretations, holding that FWS “must give independent meaning to the phrase ‘significant portion of range.’” *Id.*; *Nat’l Wildlife Fed’n*, 386 F. Supp. 2d at 566 (rejecting SPR analysis where the “Final Rule makes all other portions of the wolf’s historical or current range outside of the core gray wolf populations insignificant and unworthy of protection”).

Here, FWS's findings demand that the eastern hellbender species be threatened with extinction throughout its range before the lost portions of its range are considered "significant." This overly stringent threshold, like the previously rejected SPR definitions, impermissibly writes the SPR requirement out of the statute by failing to give it independent meaning.

VI. In Relying on Experts to Predict Future Conditions, FWS Arbitrarily Truncated the "Foreseeable Future" and Failed to Explain Why It Did Not Consider Available Scientific Data.

As addressed *supra*, the best available science should have compelled FWS to list the eastern hellbender as an endangered species, as the hellbender is in danger of extinction throughout its range. However, the agency also erred in its consideration of whether the eastern hellbender should have been listed as a threatened species—a species likely to become an endangered species within the "foreseeable future." The ESA does not define "foreseeable future," so FWS has taken a "case-by-case" approach for each species it reviews. *In re Polar Bear ESA Listing & Section 4(d) Rule Litig.*, 709 F.3d 1, 15 (D.C. Cir. 2013). The boundary of the foreseeable future for listing decisions under the ESA is generally "based upon the best data available for a particular species and its habitat." *Alaska Oil & Gas Ass'n v. Pritzker*, 840 F.3d 671, 681 (9th Cir. 2016). "When a species is exposed to a variety of threats," FWS has recognized that "each threat may be foreseeable over a different time frame." 78 Fed. Reg. 41,371, 41,372 (July 10, 2013).

FWS's definition of foreseeable future in this case as 25 years is contradicted by record evidence and is not based on the best data available. The determination is not, in fact, based upon *any* data, but on the experts' *predictions* and their discomfort with the outer time frames of those predictions. See AR 185 ("A few experts were uncomfortable forecasting beyond 25 years; therefore, we report only 10 and 25-year projections."); 84 Fed. Reg. at 13,230 ("Predictions of

the subspecies' response to threats, based on elicitation of species' experts, are reasonably reliable out to 25 years; therefore, we have concluded that 25 years is the foreseeable future for the eastern hellbender.”).

FWS's selection of 25 years as the “foreseeable future” encapsulates less than a single generation of hellbenders, which commonly live longer than 30 years and may live to be older than 50 years. AR 91, 200, 2792. Because adults often survive degraded conditions better than young, looking at only 25 years arbitrarily excludes consideration of hellbender declines and extirpations related to poor or no reproduction and overestimates the species' future viability. AR 200 (“Given the 30+ year life span of Eastern Hellbender, we would not predict a large change in the number of extant populations between the 10 and 25-year time periods. The response to impacts (especially chronic effects) will be more fully realized after 1 to 2 generations following the impact. Thus, it is more appropriate to look at time frames of 25 years or longer to discern trends.”).

In comments on the draft SSA, one reviewer noted that instead of relying on “the expert-opinion based approach” regarding future conditions, it would “obviously . . . be better to guide future projections on empirically-informed models, but those data just don’t exist.” AR 385. However, the record reflects that there *is* data available to FWS decision-makers regarding the future impacts of at least some of the 10 “influences” negatively impacting the species. The SSA and FWS decision-making process did not utilize or acknowledge these data, nor did the agency explain why it chose not to utilize the data.

For example, in 2007 a four-day workshop meeting of hellbender experts in the International Union for Conservation of Nature/Species Survival Commission (IUCN/SSC) Conservation Breeding Specialist Group resulted in the final report, “Hellbender Population and

Habitat Viability Assessment.” AR 5221-340. The thirty “workshop participants worked to explore threats to hellbender populations and develop management actions aimed at understanding and halting [the species’] precipitous decline.” AR 5229.

To assess the species’ viability, the “best available estimates of hellbender and general amphibian biology and population status were used to develop a hellbender stochastic population model using [a computer simulation model named] *Vortex*.” AR 5318. In addition, “[h]ellbender population and habitat estimates . . . [were] used to estimate population viability *over the next 75 years.*” AR 5318 (emphasis added). The workshop participants recognized several limitations with the modeling efforts, particularly for the eastern hellbender, but identified specific future actions “to better estimate the long-term viability” of the species “and guide management actions” for its conservation. AR 5318.

Although FWS is not required to utilize a particular framework or approach when predicting future impacts, its failure to even acknowledge the previous eastern hellbender population viability analysis modeling efforts, including the modeling to 75 years in the future, further renders its foreseeable future analysis arbitrary. *See Ctr. for Biological Diversity v. Zinke*, 900 F.3d at 1060 (to comply with best available science standard, FWS “cannot ignore available biological information or studies, even if it disagrees with or discredits them.”).

REMEDY

If the Court finds in Plaintiffs’ favor, they respectfully request the Court to vacate the April 4, 2019, not-warranted determination for the eastern hellbender, 84 Fed. Reg. 13,223, and remand that determination with orders that FWS issue a new decision within one year of the Court’s order. Vacatur and remand of the not-warranted decision is the presumptive remedy if it is found arbitrary and capricious. 5 U.S.C. § 706(2)(A) (“The reviewing court shall hold

unlawful and set aside agency action, findings, and conclusions found to be . . . arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with the law.”).

CONCLUSION

For the foregoing reasons, Plaintiffs respectfully ask the Court to rule in their favor on their motion for summary judgment, and to vacate and remand FWS’s not-warranted finding, and to order FWS to issue a new 12-month finding for the eastern hellbender within one year of this Court’s order.

Respectfully Submitted this 28th day of October, 2022.

s/ Brian Segee

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